AMENDMENTS TO THE CLAIMS

1.   (canceled)

2.   (canceled)

3.   (canceled)

4.   (canceled)

5.   (canceled)

6.   (canceled)

7.   (canceled)

8.   (canceled)

9.   (canceled)

10.   (canceled)

11.   (currently amended) A method for controlling a powertrain that includes an engine, automatic transmission having an offgoing friction element to be disengaged during a gear ratio change, and a torque converter having a turbine, the method comprising the steps of:

    initiating a gear ratio change from a current gear ratio to a next gear ratio;

determining a value representing a desired engine speed until disengagement of the offgoing friction element is detected;

determining a predicted current gear synchronous speed, and an offset to the current gear synchronous speed;

setting the desired engine speed equal to the predicted current gear synchronous speed plus an offset to the current gear synchronous speed;

using the desired engine speed value to control engine speed until disengagement of the offgoing friction element is detected during the gear ratio change;

determining a rate of increase of desired engine speed during a period following detection of the disengagement of the offgoing friction element;

increasing the desired engine speed value at the start of the period by said determined rate of increase of desired engine speed during the period; and

using the desired engine speed value to control engine speed during the gear ratio change.

12.   (canceled)

13.   (original) The method of claim 11, wherein the step of determining a value representing a desired engine speed until disengagement of the offgoing friction element is detected, further comprises the steps of:

determining a predicted current gear synchronous speed, and an offset to the current gear synchronous speed;

determining a predicted target turbine speed;

setting the desired engine speed equal to the sum of the offset to the current gear synchronous speed plus the greater of the predicted target turbine speed and the predicted current gear synchronous speed; and

further comprising using the desired engine speed value to control engine speed until disengagement of the offgoing friction element is detected during the gear ratio change.

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14. (original) The method of claim 11, wherein the step of determining a rate of increase of desired engine speed during the period following detection of the disengagement of the offgoing friction element, further comprises the steps of:

determining a target desired engine speed during the period;

determining a desired engine speed at the beginning of the period;

determining the length of the period that corresponds to the current gear ratio;

calculating the time rate of change of desired engine speed during the period by dividing the difference between the target desired engine speed and the desired engine speed at the beginning of the period by the length of the period.

15. (original) The method of claim 11 wherein the step of determining a rate of increase of desired engine speed during the period following detection of the disengagement of the offgoing friction element, further comprises the steps of:

determining a predicted current gear synchronous speed, and an offset to the current gear synchronous speed;

determining a predicted target turbine speed;

determining the length of the period that corresponds to the current gear ratio; and

calculating the time rate of change of desired engine speed during the period by dividing the difference between the sum of the offset to the current gear synchronous speed plus the greater of the predicted target turbine speed and the predicted current gear synchronous speed by the length of the period.

16. (original) The method of claim 11 wherein the step of increasing the desired engine speed value at the start of the period by said determined rate of increase during the period, further comprises the step of:

repetitively increasing at frequent intervals the desired engine speed value a last interval by the time rate of change of desired engine speed.

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17.   (original) The method of claim 11, further comprising the steps of:

determining a next gear synchronous speed, and a threshold of the next gear synchronous speed;

determining a target engine speed based at least on at least in part the next gear synchronous speed; and

discontinuing use of the desired engine speed value to control engine speed during the gear ratio change when the turbine speed is within the threshold of the next gear synchronous speed for a predetermined period.

18.   (original) The method of claim 11, further comprising the steps of:

determining a predicted turbine speed;

determining a next gear synchronous speed, and a threshold of the next gear synchronous speed; and

generating a command to produce an engine speed that is the lesser of the predicted turbine speed and the next gear synchronous speed; and

discontinuing use of the desired engine speed value to control engine speed during the gear ratio change when the turbine speed is within the threshold of the next gear synchronous speed for a predetermined period.

19.   (withdrawn) A method for controlling coasting downshifts in a vehicular powertrain that includes an internal combustion engine coupled to an automatic transmission for producing multiple gear ratios and having a rotating torque converter turbine driveably connected to the transmission input and hydrokinetically connected to an engine, the powertrain also including an electronic controller in communication with the engine and the automatic transmission for controlling disengagement of an offgoing friction element, engagement of an oncoming friction element, and engine speed during a gear ratio, the method comprising the steps of:

generating a command to initiate a ratio change from a current gear ratio to a next gear ratio;

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determining a predicted current gear synchronous speed, and an offset to the current gear synchronous speed;

generating, until disengagement of the offgoing friction element is detected, a command to produce an engine speed based at least in part on the predicted current gear synchronous speed and the offset to the current gear synchronous speed.

20. (withdrawn) The method of claim 19, further comprising the steps of:
determining a next gear synchronous speed;

determining a rate of increase of engine speed over a predetermined period following detection of the disengagement of the offgoing friction element; and

generating at frequent intervals a command to produce an engine speed that is increased periodically at said rate of increase.

21. (withdrawn) The method of claim 19 wherein the step of determining a rate of increase of engine speed, further comprises the steps of:

determining a time rate of increase of engine speed to occur following detection of the disengagement of the offgoing friction element based at least in part on the difference between the value of next gear synchronous speed and the value of the predicted current gear synchronous speed plus the offset to the current gear synchronous speed.

22. (withdrawn) The method of claim 19, wherein the step of determining a value representing a desired engine speed until disengagement of the offgoing friction element is detected, further comprises the steps of:

determining a predicted current gear synchronous speed, and an offset to the current gear synchronous speed;

setting the desired engine speed equal to the predicted current gear synchronous speed plus an offset to the current gear synchronous speed; and

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further comprising using the desired engine speed value to control engine speed until disengagement of the offgoing friction element is detected during the gear ratio change.

23. (withdrawn) The method of claim 19, wherein the step of determining a value representing a desired engine speed until disengagement of the offgoing friction element is detected, further comprises the steps of:

determining a predicted current gear synchronous speed, and an offset to the current gear synchronous speed;

determining a predicted target turbine speed;

setting the desired engine speed equal to the sum of the offset to the current gear synchronous speed plus the greater of the predicted target turbine speed and the predicted current gear synchronous speed; and

further comprising using the desired engine speed value to control engine speed until disengagement of the offgoing friction element is detected during the gear ratio change.

24. (canceled)

25. (canceled

26. (canceled)

27. (canceled)

28. (canceled)

29. (canceled)

30. (canceled)

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31.   (canceled)

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